Amendments to the Claims:

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-48. (Canceled)

49. (Currently Amended) An apparatus for performing area correlation on a first feature image and a second feature image, each feature image including a plurality of lines, the apparatus comprising:

one or more buffers capable of storing at least part of each feature image;

a window summation buffer; and

a processor capable of:

obtaining a line from each feature image;

computing a correlation of the two lines at a plurality of disparities;

[[and]]

storing the results of the correlation in the window summation buffer;

using the information stored in the window summation buffer to compute a new line in a disparity image; and

obtaining successive lines of each of said feature images and updating said window summation buffer.

50. (Cancelled)

51. (Currently Amended) The apparatus of claim [[50]] 49, wherein the processor is further capable of computing two minimum values from the information stored in the window summation buffer to perform a left/right consistency check.

52. (Currently Amended) The apparatus of claim [[50]] 49, wherein the processor is further capable of computing fractional pixel disparities.

53.   (Previously Presented) The apparatus of claim 49, wherein the processor is further capable of computing a confidence value.

54.   (Currently Amended) An apparatus for performing area correlation on a first and a second feature images using a first and a second correlation windows of size X pixels by Y lines, where Y is less than 10% of the total number of lines in either feature image, and X is less than 10% of the total number of pixels in a line of either feature image, the apparatus comprising:

a first buffer capable of storing more than Y but less than 3Y lines of the first feature image;

a second buffer capable of storing more than Y but less than 3Y lines of the second feature image;

a window summation buffer; and

a processor capable of:

correlating, at a plurality of disparities, corresponding lines in the first and the second correlation windows; [[and]]

storing the results of the correlation in the window summation buffer;

using the information stored in the window summation buffer to compute a new line in a disparity image; and

obtaining successive lines of each of said feature images and updating said window summation buffer.

55.   (Cancelled)

56.   (Currently Amended) The apparatus of claim [[55]] 54, wherein the processor is further capable of computing two minimum values from the information stored in the window summation buffer to perform a left/right consistency check.

57.   (Currently Amended) The apparatus of claim [[55]] 54, wherein the processor is further capable of computing fractional pixel disparities.

58.   (Previously Presented) The apparatus of claim 54, wherein the processor is further capable of computing a confidence value.

59.   (Currently Amended) A method for performing area correlation on a first feature image and a second feature image using a window summation buffer to cache partial results, each feature image including a plurality of lines, the method comprising the steps of:

obtaining a line from each feature image;

computing a correlation of the two lines at a plurality of disparities; [[and]]

storing the results of the computing in the window summation buffer;

using the information stored in the window summation buffer to compute a new line in a disparity image; and

obtaining successive lines of each of said feature images and updating said window summation buffer.

60.   (Cancelled)

61.   (Currently Amended) The method of claim [[60]] 59, further comprising the step of computing two minimum values from the information stored in the window summation buffer to perform a left/right consistency check.

62.   (Currently Amended) The method of claim [[60]] 59, further comprising the step of computing fractional pixel disparities.

63.   (Previously Presented) The method of claim 59, further comprising the step of computing a confidence value.

64.   (Currently Amended) A method for performing area correlation on a first and a second feature images using a first and a second correlation windows of size X pixels by Y lines, where Y is less than 10% of the total number of lines in a feature image, and X is less than 10% of the total number of pixels in a line of a feature image, the method comprising the steps of:

storing more than Y but less than 3Y consecutive lines of the first feature image in a first buffer;

storing more than Y but less than 3Y consecutive lines of the second feature image in a second buffer;

correlating, at a plurality of disparities, corresponding lines in the first and the second correlation windows; [[and]]

storing the results of the correlating in a window summation buffer;

using the information stored in the window summation buffer to compute a new line in a disparity image; and

obtaining successive lines of each of said feature images and updating said window summation buffer.

65.   (Cancelled)

66.   (Currently Amended) The method of claim [[65]] 64 further comprising the step of computing two minimum values from the information stored in the window summation buffer to perform a left/right consistency check.

67.   (Currently Amended) The method of claim [[65]] 64, further comprising the step of computing fractional pixel disparities.

68.   (Previously Presented) The method of claim 64, further comprising the step of computing a confidence value.

69.   (New) An apparatus as recited in claim 49, wherein said processor is further capable of rectification and feature extraction, and wherein said rectification and feature extraction proceed in parallel with said correlation.

70.   (New) An apparatus as recited in claim 49, wherein said window summation buffer has size N x (D+1), where D is the number of different disparities that are checked for each pixel in said feature images, where for each disparity $0 <= d < D$ there is a line of size N in said window summation buffer, where each value in said line is the correlation of said window centered on a corresponding pixel in said first feature image to said window centered on a corresponding pixel offset by the disparity d in said second feature image.

71.   (New) A computer readable medium including at least computer program code for performing area correlation on a first feature image and a second feature image using a window summation buffer to cache partial results, each feature image including a plurality of lines, the computer readable medium comprising:

computer program code for obtaining a line from each feature image;

computer program code for computing a correlation of the two lines at a plurality of disparities;

computer program code for storing the results of the computing in the window summation buffer;

computer program code for using the information stored in the window summation buffer to compute a new line in a disparity image; and

computer program code for obtaining successive lines of each of said feature images and updating said window summation buffer.